## **SOUTHWEST REGION**

# By Bruce Northcote, PGeo Regional Geologist, Vancouver

### **SUMMARY AND TRENDS**

The Myra Falls copper-zinc-gold and silver mine, Quinsam thermal coal mine, the major limestone quarries at Gillies Bay, Blubber Bay and Van Anda on Texada Island as well as a large number of aggregate pits and quarries contributed significantly to the region's economy in 2007. The outlook for 2008 and beyond is positive with strong demand for all these products.

A number of large infrastructure projects in BC and in the northwestern United States are increasingly important in maintaining demand for concrete and aggregates. In response, a new sand and gravel super quarry located near Port McNeill, Orca, opened in 2007 and is ramping up production. Quinsam Coal and limestone producer Texada Quarrying are closely linked to Lower Mainland and US Pacific Northwest cement manufacturers. More generally, proximity to the Province's main population centres and transportation routes, including coastal shipping routes, are important to the viability of producers of low unitvalue commodities. The use of relatively economical tidewater transportation methods to move these commodities to coastal markets and Hawaii is a long term trend that continued in 2007.

High commodity prices have led to an increase in metals exploration in the southwest in recent years. The exploration spending forecast for 2007 is \$13 million, a ten-year high (Figure 5.1). The estimated total metres drilled also shows a marked increase (Figure 5.2). The most active exploration areas in the southwest region have seen previous advanced-stage exploration projects, and in some cases, production. Common themes are deeper drilling, more extensive exploration under overburden, exploration in areas where logging has opened road access and exposures, and even where glaciers have receded.

The projects with the largest expenditures were at Myra Falls, Hushamu copper-gold porphyry, Mineral Creek / Big Southeaster gold projects and precious metal enriched skarn exploration at the site of the former Merry Widow iron and Old Sport copper mines.

Mineral exploration in the region has generally focused on Vancouver Island and the Harrison Lake area. The main areas of interests were the Vancouver Island copper trend north of Rupert Inlet, northern Vancouver Island skarn mineralization, Tertiary intrusion-related mineralization, Sicker Group volcanic-hosted mineralization and varied targets around Harrison Lake.

In the Hozameen trend the focus was on the Giant Copper prospect again this year.

More than 260 notices of work have been filed in the southwest in the 3 years ending in 2007. Over 40% were for sand and gravel. Only 1-2% were for placer work. In 2007 alone, at least 91 notices had been recorded as of early December, 38 of which are for sand and gravel, 53 for mineral exploration. None is for placer. Vancouver Island and the southern mainland have been the focus of most of the region's work.

Current major producing mine and quarry locations in the Southwest Region are shown on Figure 5.3 and basic data concerning these sites are listed in Table 5.1.

### METAL PRODUCTION

The Myra Falls operations of NVI Mining Ltd (a subsidiary of Breakwater Resources Ltd) are located at the site of a number of volcanic-hosted massive sulphide

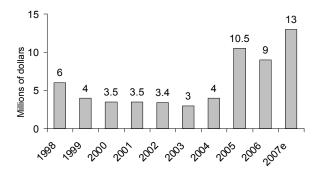


Figure 5.1. Exploration expenditures in Southwest British Columbia.

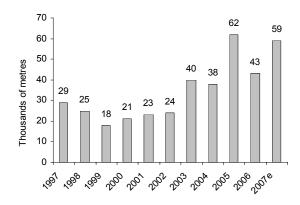


Figure 5.2. Exploration drilling in Southwest British Columbia.

deposits hosted by the Paleozoic Sicker Group, exposed in the Buttle Lake Uplift, one of a number of fault-bounded exposures of Sicker Group rocks on Vancouver Island. The deposits are polymetallic massive sulphide ore dominated by sphalerite, rich in zinc, copper, silver and gold and include disseminated sulphides and zoned pyritic massive sulphide and stringer sulphide zones (Figure 5.4). Despite more than 100 years of prospecting and mine production beginning at the site in 1966, this mining camp has a continuing history of exploration success, and there is as yet little indication of significantly diminishing returns on exploration investment. There are currently two mines operating at the site: the Battle-Gap and the H-W.

In the first three quarters of 2007, Myra Falls operations milled 544 420 tonnes of ore, slightly less than the same period last year. A final figure for 2007 is estimated to be approximately 744 000 tonnes. As of December 31, 2006, proven and probable reserves stood at 6.134 million tonnes of 5.7% Zn, 1.0% Cu, 1.2 g/t Au, 41 g/t Ag.



Figure 5.4. Ore clast breccia, H-W mine, Myra Falls.

Although some resources are currently directed toward development and ongoing exploration activities,

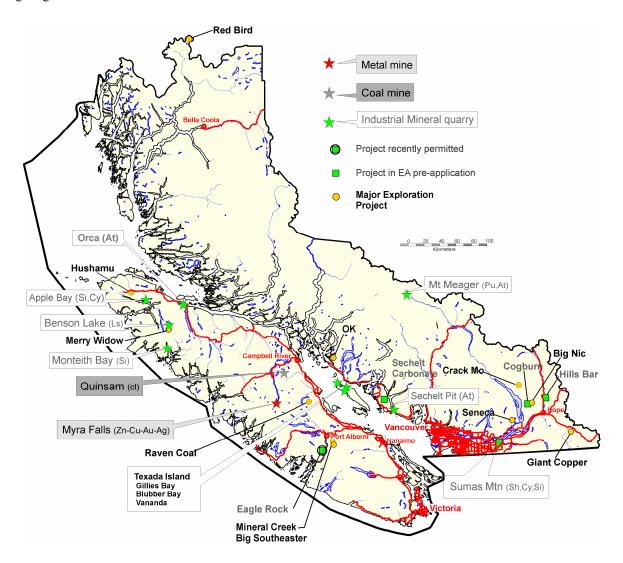


Figure 5.3. Locations of mines, major quarries and exploration projects in Southwest British Columbia, 2007.

TABLE 5.1. PRODUCING MINES AND QUARRIES, SOUTHWEST REGION, 2007

Mine / Quarry Operator	Location / community	Commodities	Forecast production in 2006	Employment -person years	Reserves as of January 1, 2006
Myra Falls NVI Mining Ltd (Breakwater Resources Ltd)	Campbell River	Zn-Cu-Au-Ag	744 400 t of 4.9% Zn, 1.1% Cu, 1.3 g/t Au, 46 g/t Ag	410	6.1 Mt at 5.7% Zn, 1.0% Cu, 1.2 g/t Au, 41 g/t Ag (prov+prob)
Quinsam Quinsam Coal Corp (Hillsborough Resources Ltd)	Campbell River	Thermal coal	472 000 t clean coal	91	24.1 million tonnes (in situ proven and probable)
Apple Bay (PEM 100) Electra Gold Ltd	Northern Van Island	Geyserite	122 000 t	6	5 million t
Benson Lake Imasco Minerals Inc	Northwest Van Island	Limestone	40 000 t	4	100+ years
Blubber Bay Ash Grove Cement Corp	Texada Island	Limestone aggregate, dolomitic lst	1 million t	16	100+ years
Gillies Bay Texada Quarrying Ltd (Lafarge Canada Inc)	Texada Island	Limestone, lst aggregate	6.7 million t	112	100+ years
Van Anda Imperial Limestone Company Ltd (JA Jack & Sons Inc)	Texada Island	Limestone	255 000 t	10	50 years
Monteith Bay Lehigh Northwest Cement Ltd	Northwest Van Island	Geyserite	Care and maintenance 2007		
Mount Meager Great Pacific Pumice Ltd	Pemberton	Pumice	Care and maintenance 2007		100+ years
Sumas Mtn Clayburn Industries Ltd and cement manufacturer partners	Abbotsford	Clay, shale and sandstone	~ 500 000 t	10-20	~70 years

Note: Blubber Bay and Gillies Bay produce limestone for both industrial mineral applications and aggregates - other large aggregate only operations are not included in this table.

Breakwater hopes to move ore production closer to its mill throughput capacity of 1.4 million tonnes as ventilation and hauling capacity issues are dealt with. Exploration and development are ongoing, with a \$3.7 million 2007 budget for exploration and over \$18 million in development expenditures during the first three quarters of the year.

Concentrates are trucked to port facilities at Campbell River.

### COAL PRODUCTION

Coal measures at Quinsam mine are hosted by members of the Comox Formation. The mine is currently

an underground room and pillar operation and produces a high volatile, low sulphur coal sold for thermal applications. The majority goes to Lower Mainland and US Pacific Northwest cement plants. Quinsam also supplies international customers in Asia, Central and South America. Coal is trucked to a barge loading facility at Middlepoint and delivered by barge to local customers or reloaded onto freighters at a nearby deep water port facility for international customers.

Hillsborough Resources Limited's December 31, 2007 production forecast for the Quinsam Coal mine is 715 000 tonnes run-of-mine yielding 472 000 tonnes clean coal. Production difficulties occurred due to adverse weather conditions early in the first quarter and mechanical and ground difficulties beginning in the second. A recent financing should allow plant

improvement and upgrades aimed at improving recoveries. The base case target for 2008 is 630 000 tonnes clean coal from the current underground mine. Additional production from other sources is under consideration and some development work to that end occurred in 2007. Mining was to commence at 2 South Pit at the time of writing.

In situ proven and probable reserves as of December 31, 2006 were 24.093 million tonnes of thermal coal. Measured and indicated resources were estimated at 5.810 million tonnes.

## INDUSTRIAL MINERAL QUARRIES

Texada Quarrying Ltd expects to produce and ship approximately 6.7 million tonnes in total in 2007 from its quarry near **Gillies Bay**. Most of this (4.9 million tonnes) is limestone, principally for cement manufacture at two Lower Mainland plants, two Seattle-area plants and one in Northern California. Dikes are mined selectively and the igneous rock is used as aggregate of various sizes from ¼" minus to boulders. About 1.8 million tonnes were shipped as aggregate products. Recently the quarry has been supplying rock of various sizes to the Delta Port expansion at Roberts Bank. Aggregate markets beyond the Lower Mainland include Bellingham, Seattle area, California, Alaska, Hawaii and Mexico. The quarry has a loadout facility capable of accommodating Panamax class freighters.

Ash Grove Cement Company's **Blubber Bay** quarry can produce several carbonate products including aggregates, cement grade limestone, chemical grade limestone, agricultural lime and dolomite. In 2007 they expect to produce approximately 1 million tonnes, mostly aggregate, principally to shipped to the Lower Mainland market. Current loading facilities accommodate barges up to 17 500 tonnes, but the possibility of upgrading the facilities to accommodate freighters exists. Their dolomite product (>16.75% MgO) is used primarily for agricultural purposes and is shipped to Portland Oregon. In total approximately 100 000 tonnes goes of their products go to the US.

Imperial Limestone Company Ltd expects 2007 production at their Texada quarry near **Van Anda** to be very similar to last year's, about 255 000 tonnes. The majority (~95%) of their product is barged to parent company J.A. Jack and Sons Inc in Seattle where it is dried, crushed and screened. The product is a chemical grade limestone and is generally not used for cement or aggregate. End uses include agriculture and manufacturing of glass, plaster, roofing and other building materials. Products are marketed throughout the Pacific Northwest

Clayburn Industries Ltd expects production at **Sumas Mountain** to remain approximately the same as previous years at roughly 500 000 tonnes, 85% of which is shale

supplied to cement manufacturers. True fireclay (refractory clay) is also mined at Sumas Mountain. Approximately 15% of Clayburn's product is this high quality material used in the manufacture of refractory products, manufactured, marketed and installed by Clayburn Refractories Ltd.

Sumas Clay Products Ltd, owned and operated by the Sumas Mountain first nation manufactures and markets a colourful range of facebrick and paving products made from **Sumas Mountain** clay. The company specializes in custom orders. Clients are both local and international.

Electra Gold Ltd's **Apple Bay** or **Pem 100** operation appears on track to deliver over 120 000 tonnes of chalky geyserite to Ash Grove Cement in 2007 (Figure 5.5). In addition, a bulk sample was shipped to Lafarge for testing purposes. Construction of an access road to another nearby deposit began in late 2007 and the company recently upgraded its barge loading facility.

Imasco Minerals Inc has been operating a limestone quarry at **Benson Lake** since 1985. In 2007 it is expected to produce 40 000 tonnes of high brightness carbonate. About half finds industrial application as filler in paint and plastic products. It is also used in Imasco's line of stucco products.

Lehigh Northwest Cement's quarry at **Monteith Bay** had no 2007 production. The quarry supplies a high silica product for cement manufacture on a seasonal basis and does not operate every year (Figure 5.6).

An accident halted production at Great Pacific Pumice Inc's **Mount Meager** quarry mid-year. The operation is currently under care and maintenance. Garibaldi Aggregates Ltd also quarries pumice in the area and is currently preparing an application for a mining lease. Pumice finds application as light weight fill and in specialty concrete, among other uses (Figure 5.7).

### **AGGREGATES**

Aggregate-only operations, natural sand and gravel as well as increasingly, crushed rock products, represent the



Figure 5.5. Drilling at Electra Gold's Apple Bay quarry.



Figure 5.6. Pemberton Hills. Silica caps overlying hydrothermal systems resist erosion.



Figure 5.7. Mount Meager and Plinth Peak. The adjacent buried vent is the probable source of economic pumice deposits.

largest part of the southwest's mining sector by value of production, although they represent the lowest unit value commodities. In addition to availability of high quality materials, the proximity to Lower Mainland and Southern Vancouver Island markets as well as access to tidewater for shipping purposes make this possible.

Housing starts aside, infrastructure projects in southwestern BC and the western United States, notably California will continue to require raw materials as the current cycle of repair and improvement continues.

As noted above, two of the limestone quarries on Texada Island produce aggregates, in the case of Blubber Bay, primarily aggregate since it stopped shipping to Ashgrove cement plant in 2004. Construction Aggregates Ltd's **Sechelt Pit** is BC's largest producer of Sand and Gravel in 2007 with a projected 5.7 million tonnes, up from last year. Production is expected to be up further in 2008 as Construction Aggregates' Producers Pit closes. Producers Pit will produce 1.9 million tonnes in 2007, its final year.

Cox Station Quarry, operated by Mainland Sand and Gravel Limited produces a crushed quartz diorite aggregate on the north side of Sumas Mountain. In recent years, production has been close to 2 million tonnes per year, with an estimated 2.2 million in 2006. Material is shipped down the Fraser River on barges. Mainland also barges dredged river sand to Gateway Project sites such as Golden Ears Bridge.

Among the other large producers is **Earle Creek** (Lafarge North America), consistently well over 1 million tonnes in recent years. **Pipeline Road** operations of Jack Cewe Ltd and Allard Contractors Ltd together will probably produce more than 1 million tonnes in 2007 (Figure 5.8).



Figure 5.8. Jack Cewe's aggregate processing plant at Pipeline Road, Coquitlam.

Polaris Minerals Corporation's **Orca** Sand and Gravel began stockpiling in late 2006 and made its first shipments in early 2007. Production is expected to be over 1.5 million tonnes in 2007. This emerging super quarry shares some key features with the Sechelt pit – clean, high quality sand and gravel products, large capacity, large reserves and ability to accommodate self-unloading freighters at its loadout facility.

Polaris plans to ramp up production to more than 6 million tonnes per year over time. They also anticipate a feasibility study on their proposed **Eagle Rock** operation on Alberni Inlet, which would supply a crushed granitic aggregate product. It is currently permitted and has a 681.9 million tonne resource. Although they also supply Canadian customers, Polaris' business model has specifically targeted the California market. Like the other operations with freighter loadout facilities, they have supplied customers in Hawaii as well. Shipments to Washington and Oregon are anticipated.

A long term trend toward use of crushed rock aggregate products is evident. Major producers include Cox Station, Gillies Bay and Blubber Bay. In addition there are a number of smaller quarries such as Watts Point. Eagle Rock is another potential super quarry under consideration by Polaris Minerals Corporation.

The value of aggregate production in the southwestern region is conservatively estimated at roughly \$200 million in 2007.

#### DIMENSION/LANDSCAPING STONE

Dimension Stone, Landscaping and Decorative stone quarrying are a smaller part of the region's economy, but nonetheless are the basis of several successful businesses. Local granite, typically quartz diorite or granodiorite in various salt and pepper grey colours does not compete well with more exotic imported colours from Brazil, for example. Consequently local production is generally low. Bucking this trend is the historic **Hardy Island** Quarry, with about 6000 tonnes quarried this year, sold through Bedrock Granite Sales Ltd. The company also markets **Haddington Island** Andesite (dacite), another stone found in local architecture dating back more than 100 years. The recently completed Air India memorial in

Stanley Park is constructed of Haddington Island stone (Figure 5.9).

Other notable stone producers include **K2** Stone Quarries Ltd. They produce an attractive green metasiltstone with slaty partings. The quarry is located near Port Renfrew and the main yard at Duke Point near Nanaimo. Several smaller operators are test marketing Port Renfrew area slates, or quarrying at a small scale.

Also on Vancouver Island, Matrix Marble and Stone, based in Duncan, quarry and finish products made of local marble. Three colours are available from their Vancouver Island quarries: **Black Carmanah**, **Tlupana Blue** and **Island White** (Figure 5.10). Apart from their showroom, examples of the stone can be found at Wall Centre in Vancouver.

Quaternary volcanics are quarried along the Whistler corridor for landscaping and masonry purposes. Columns and slabs of Garibaldi basalt, andesite and dacite can be found decorating many local gardens, but are also finding markets farther afield. Quarriers include Huckleberry Stone Supply Ltd and Corridor Masonry Corp.

### OTHER MINERAL PRODUCTS

Other mineral products are quarried or collected periodically in southwestern BC. For example, the numerous iron skarns in the area have periodically supplied magnetite for washing coal, or for specialty concrete for radiation shielding. Coastal BC has a few rare deposits of extremely fine glacial clay suitable for medical and cosmetic purposes. Carrie Cove Clay and Precision Laboratories Ltd are among the local marketers of this material, quarried intermittently.

## **EXPLORATION**

### North Vancouver Island

Grande Portage Resources Inc has assembled an extensive land package on northern Vancouver Island comprising the Merry Widow Mountain area and properties along a south easterly trend to Tahsis. Targets of the current exploration campaigns are precious metal enriched skarn and spatially associated, possibly Tertiary occurrences.

The core of the **Merry Widow** Property encompasses several past-producers, viz. the **Merry Widow** (MINFILE 092L 044), **Kingfisher** (MINFILE 092L 045) and **Raven** (MINFILE 092L 046) magnetite skarn deposits as well as the **Old Sport** (MINFILE 092L 035) and **Benson Lake** (MINFILE 092L 091) mines which produced copper, iron, silver and gold from the Old Sport Horizon in the 1960s and early 1970s (Figure 5.11).

Focus of 2007 drilling were a roughly north-south



Figure 5.9. A piece of Haddington Island under the 11 foot saw at Bedrock Granite Sales Ltd.



Figure 5.10. Bathroom by Matrix Marble using Vancouver Island White.



Figure 5.11. Skarn assemblage at Merry Widow zone at outcrop scale. Massive chalcopyrite under the hammer.

trending string of massive sulphide occurrences crossing the sites of historical iron mining. At a 0.5 g/t Au cut-off, a preliminary resource estimate included 950 000 t in the measured and indicated categories averaging 2.03 g/t Au, 5.64 g/t Ag, 0.34% Cu, 0.013% Co and 16.1% Fe. An additional 120 000 tonnes in the inferred category averages 1.2 g/t Au, 2.8 g/t Ag, 0.13% Cu and 0.008% Co.

Seven holes targeted the Old Sport horizon at depth, but difficult ground conditions for diamond drilling may favour re-entry of the Old Sport underground workings as a base for further exploration. Baseline water sampling was initiated late this year with a view to determining the feasibility of dewatering the workings.

At the time of writing, a drill program is underway at the **Teihsum River** (MINFILE 092L 350) property on the south western flank of Merry Widow Mountain. Teihsum River is a gold prospect under option from Silver Fields Resources Inc, which conducted a 2004-05 program on the property.

At least some of the gold-enriched massive sulphide mineralization with retrograde skarn alteration in the Merry Widow Mountain area is suspected to be Tertiary in age.

The **Cherry** (MINFILE 092E 024) claims to the southwest saw an IP survey, silt and soil sampling in 2007. Mapping, sampling and prospecting were also carried out on the **Scrutor Gold** (MINFILE 092L 100) property, recently optioned by Grande Portage. The company has also acquired additional ground in the Tahsis area containing known magnetite occurrences. Prospecting and sampling will focus on precious metals enriched occurrences similar to targets to the north.

West of Merry Widow and Old Sport, another Copper skarn with past production is the **Yreka** (MINFILE 092L 052, 104, 336), also seeing some renewed interest this year with Lucky Strike Resources Ltd signing an option agreement and initiating preliminary exploration. Historically, significant silver and some gold was recovered in addition to copper. Still further west, Homegold Resources Ltd conducted a soil sampling program near **LeMare Lake** (MINFILE 092L 328, 329).

A discovery of skarn mineralization by Brent Hemingway at **Steele Lake** (MINFILE 092L 164) is being investigated by International Bethlehem Mining Corp. Other mineralization is known in the area, Initial work consisted of stream sediment sampling. Mapping, geophysics and trenching are expected to follow, with further work dependent upon results.

The area of the **Hushamu** (MINFILE 092L 240, 200, 078) deposit itself has seen extensive exploration for copper gold and molybdenum since 1966, when Utah Construction and Mining discovered and began developing its **Island Copper** (MINFILE 092L 158) deposit.

Hushamu saw little activity in 2006, but work resumed in early 2007. Western Copper Corporation completed a 4300 m drill program on the Hushamu Property, focused on the NW Expo area near the north western extent of their Hushamu Block, which covers a number of mineral occurrences in the Island Copper Trend north of Rupert Inlet. The 2007 work indicated continuity of separate molybdenum-gold and goldcopper-molybdenum zones. Drilling at NW Expo did not affect the existing Hushamu resource, but represents a separate target which could possibly be developed in conjunction with the existing resource at the Hushamu Zone. Western Copper is reviewing results and no further exploration of development plans had been announced at the time of writing. The current NI 43-101 resource stands as follows at 0.2% Cu cut-off:

Measured + Indicated 230.9 million tonnes at 0.28% Cu, 0.309 g/t Au

Inferred 52.8 million tonnes at 0.28% Cu, 0.377 g/t

Molybdenum mineralization is contained within the deposit, however as was the case at Giant Copper, historical assay data are insufficient to permit an NI 43-101 compliant resource calculation for that element.

Homegold Resources Ltd did some trenching at **Caledonia** (MINFILE 092L 061, 209), where there is a small underground development dating back to the 1920s. Historical samples return significant silver, copper, lead and zinc values. The Caledonia prospect appears to be a skarn. Drilling is proposed.

### Mid-Island

Breakwater Resources Ltd is conducting a major exploration project at **Myra Falls** (MINFILE 092F 071, 072, 073, 330) with a 2007 budget of \$3.7 million. The objective is to identify further resources, ultimately adding to reserves and extending mine life at this already long-lived producer, soon to enter its forty second year. Breakwater's stated goal is to extend mine life by ten years at each of its operations. At Myra Falls, significant work to this end began in 2006 and continued through 2007 with diamond drilling and surface geophysical work in addition to underground exploration headings (classed as development expenditures). To date, results and many details of the work have not been released, but past exploration efforts have generally met with success.

**Quinsam Coal's** (MINFILE 092F 319) 2007 exploration and development work is probably best characterized as the latter, aimed at near term production increases. Hillsborough Resources Limited expects to follow last year's exploration at Quinsam North with infill drilling and feasibility study in 2008. A 100 000 tonne bulk sample is planned at 7 South.

The Mineral Creek (MINFILE 092F 079, 331) and Big Southeaster (MINFILE 092F 078, 285) quartz vein

gold projects are adjacent with separate historic workings located within approximately two kilometres of one another. Although managed as separate projects, both are operated by Bitterroot Resources Ltd. Bitterroot's partner at Mineral Creek is Mineral Creek Ventures Inc. The Mineral Creek fault extends across both properties.

A portal was collared on the **Lower Linda** vein. At the time of writing approximately 200 tonnes of material had been extracted as a bulk sample. A permit is in place allowing up to 5000 tonnes. Work is expected to continue as weather conditions permit.

Big Southeaster was the target of extensive diamond drilling in 2007 with 10 782 m in 38 holes.

In addition to completion of the bulk sampling program, further drilling is anticipated on both Big Southeaster and Mineral Creek in the coming year. Most results were not available at time of writing, but one hole in the Mineral Creek fault zone, BTT-BS 9, returned 82 separate intervals greater than 0.2 g/t throughout most of its 243 m length.

Compliance Energy Corporation followed a substantial 2006 program at **Raven Coal** (MINFILE 092F 313) with a NI 43-101 resource estimate and preliminary economic assessment. The company has recent begun to exercise a purchase option on Comox Basin coal rights including Raven. In situ high volatile bituminous coal resources are estimated at just over 39 million tonnes measured and indicated and 59 million tonnes inferred.

There has been no recent field work reported at the Lara (MINFILE 092B 129) property of Laramide Resources Ltd, however review of historical data resulted in a NI 43-101 compliant resource estimate for the volcanogenic base and precious metal deposit of 1.81 million tonnes combined indicated and inferred categories. Laramide plans to spin off its non-uranium assets including Lara into a separate company, NewGoldCo. Like Myra Falls and Mineral Creek area projects, Lara is hosted by Sicker Group volcanic rocks, in this case exposed in the Cowichan Lake area.

### Powell River

The **OK**, or **Okeover** (MINFILE 092K 008, 057) property is a porphyry Copper-molybdenum deposit located northeast of Powell River. Originally staked by Robert Mickle in 1965, the property's mineral tenures have been maintained since that time and the property has been the subject of several significant exploration campaigns. Prophecy Resource Corp is conducting the current program.

In total there has been approximately 30 000 m of drilling recorded on the property, with over 2000 m likely to be completed by Prophecy by the end of 2007. A November 2006 NI 43-101 compliant estimate of inferred resource is 86.8 million tonnes average 0.31% Cu, 0.014% MoS<sub>2</sub> at a Cu cut-off of 0.20% at the **North Lake** 

Zone (MINFILE 092K 008). Recent step out drilling in the there suggests potential to expand this resource to the east.

Roughly bisecting the property are eight identified zones of copper and molybdenum mineralization along a 5 km north-south trend. Late 2007 drilling is testing the **South Breccia** Zone (MINFILE 092K 057), not part of the 2006 resource and not previously subject of intensive drilling (Figure 5.10).

OK is somewhat unusual among BC's porphyry deposits, at least those approaching economic proportions, in that it is located within the Coast Plutonic Complex. Country rocks are granitoids, probably of mid-Cretaceous age. The mineralizing phase is thought to be part of the OK complex, largely quartz diorite and including a leucocratic phase(s) and a crowded quartz feldspar porphyry. Post-mineral intrusives are also present. In view of 2007 results, future work is likely.

Nearby examples of porphyry style Cu-Mo mineralization to the east include **Hi-Mars** (MINFILE 092F 292) and **Don** (MINFILE 092K 106). The Don was to be subject of drilling by Dentonia Resources Ltd in 2007, but that program was been deferred pending an archaeological investigation and other preliminary work.

#### Harrison Lake - Northern Cascades

Within the northern Cascades there are several Mo showings generally thought to be of the low-fluorine or quartz monzonite porphyry type. **Salal Creek** (MINFILE 092JW 005) saw minor work by Paget Resources Corporation, however the **Crack Moly** Project (MINFILE 092HNW072) of Pacific Cascades Minerals Inc was subject of a 9 hole helicopter-supported diamond drill program.

Molybdenite is known at the location in veins, breccias and disseminations at surface but the property had not been previously drilled. The fifth hole was particularly encouraging. CM07-05 intersected 195.05 m



Figure 5.10. "Bullseye" at the South Breccia Zone, OK property.

of average 0.053% Mo. The first five holes were drilled at the eastern margins of a high-chargeability zone believed to extend to depth. Four of the five intersected significant Mo mineralization. The company plans further testing of the geophysical target, ideally with a drill rig capable of reaching several hundred metres depth.

**Gem** (MINFILE 092HNW001), located 13 km to the southeast has seen some surface work in recent years, though none is reported this year. That property has a historical resource.

There was a detailed magnetometer survey over the **Big Nic** in 2007, followed by 5 short drillholes in this area of limited exposure. Pacific Coast Nickel Corp has acquired claims to the southeast and plans to begin a winter program. Big Nic is located approximately 5 km southwest of **Giant Mascot** (MINFILE 092HSW125) a past nickel producer. A few kilometres to the northwest, International Millennium Mining Corp carried out a program of sampling and geophysics on the **Jason** claims (MINFILE 092HNW076), identifying a source of 2004 platinum stream sediment anomalies.

Imperial Metals Corporation continued drilling at **Giant Copper** (MINFILE 092HSW001, 002, 027, 161) this year with two holes testing the **AM Breccia** zone (MINFILE 092HSW161). Giant Copper porphyry-related mineralization lies immediately east of the Hozameen fault and is apparently associated with small, mid to late-Tertiary dioritic to granodioritic stocks intruding Upper Jurassic to Lower Cretaceous clastic and volcaniclastic rocks.

Late 2007 work included construction of a camp and two diamond-drill holes totalling 2164 feet (659.6 m) with the program expected to continue in spring. Testing of the AM Breccia Zone in 2006 demonstrated that the breccia extends deeper than previously known and intercepted significant mineralization.

GCS06-01 intersected a 296.7 m interval grading 0.53% Cu, 0.20 g/t Au, 13.44 g/t Ag, 0.027% Mo. Hole GCS06-02 completed to a depth of 868.4 m intersected a 602.0 m interval grading 0.30% Cu, 0.15 g/t Au, 11.73 g/t Ag from 203.1 m to 805.1 m. True widths are approximately 25% of drilled intervals.

The Giant Copper property was first staked in 1930 and is at an advanced stage of exploration. Historically there has been more than 22 000 m of drilling and approximately 6 km of underground workings. It was subject of a positive 1989 feasibility study and the AM zone was the subject of a 1997 (prior to National Instrument 43-101) resource estimate. Historically, Mo was not routinely assayed.

Carat Exploration Inc completed a significant drill program in 2007 at the **Seneca** property (MINFILE 092HSW013) west of Harrison Lake. There were several encouraging intercepts in the program focused on the Weaver Lake area, east of the historic Seneca polymetallic VMS deposit. The company's plans for

future work are unknown, although they consider the property worthy of further work.

Centurion Minerals Ltd also carried out a 481.29 m diamond drill program west of Harrison Lake on the **Thor-Odin** claims (MINFILE 092HSW140). While there were mineralized intercepts and some indications of an environment permissible for VMS mineralization, there were no intersections considered potentially economic and the company will not pursue further work at the property.

There has been no new work reported at Abo Gold Property at Harrison Lake since 2005, however Copper Canyon Resources Ltd announced an option agreement with Egoli Resources Inc, suggesting a resumption of exploration in the near future. The property has a NI 43-101 compliant resource of 1.845 million tonnes grading 2.79 g/t Au indicated and 0.6 million tonne grading 2.8 g/t Au inferred.

#### Central Coast

The **Red Bird** Project (MINFILE 093E 026), operated by Torch River Resources Ltd represents another reactivated advanced-stage property. Located north of Haven Lake near Tweedsmuir Park, in recent years it has been covered in the north western section of this publication, but it is actually located on the southern side of the drainage divide marking the boundary between mining regions.

Red Bird is a molybdenum prospect, with porphyry style mineralization related to an Eocene quartz monzonite porphyry stock intruding volcanic rocks of the Kasalka Group. An August 2007 updated resource estimate using a 0.03% Mo cut-off gave an indicated resource of 43 340 000 tonnes at 0.064% Mo and an inferred resource of 70 480 000 tonnes at 0.058% Mo.

The 2007 program consisted of ten diamond-drill holes on the Main Zone Western Extension totalling 2645.95 m of core drilling. Assays indicate potential for an economic rhenium byproduct associated with the molybdenum.

### **OUTLOOK FOR 2008**

If demand for cement and aggregates remains strong, as various continuing multi-year infrastructure projects suggest it should, many of the southwest's producers remain in position to benefit. Continued high production levels at the largest quarries and pits are expected. Orca, Sechelt Pit, Quinsam Coal have stated intentions to increase production in the coming year. Breakwater Resources has stated similar intentions for its Myra Falls Operations with recent progress toward that goal.

With molybdenum prices holding relatively firm at the time of writing, one continuing interest in Mo porphyry and Cu-Mo porphyry prospects in the region is expected. For example, encouraging results at the Crack project should encourage further testing of the target. Further North, Torch River Resources has indicated an intention to continue drilling Red Bird in 2008.

Results from the South Breccia zone at OK are pending, but earlier 2007 drilling suggests the northern resource could grow significantly with further work.

Imperial Metals has indicated an intention to complete their program at Giant Copper.

Bitterroot Resources plans a continuation of work at Mineral Creek and Big Southeaster.

Upgrades and development are set to continue at Quinsam Coal. A recent financing is to fund this effort.

Grande Portage Resources has a number of targets on Northern Vancouver Island of continuing interest. Among these is the Old Sport horizon. A rehabilitation of underground workings is proposed.

In addition, there are a number of developed properties for which 2008 plans are as yet unknown. Among these are Hushamu, Seneca, Lara and Raven Coal. Each of these is reported by their operators and consultants to be worthy of further exploration and/or development. Many more projects remain in planning stages or in preliminary consultations with stakeholders. Others are, as always, contingent upon financing. Among these will be 2008s new and reactivated exploration projects.

### **ACKNOWLEDGMENTS**

Thanks to all who generously shared their time, knowledge and information. The author looks forward to speaking with you again in 2008 and meeting more members of the exploration and mining community around the region. Thanks also to Dave Lefebure for his help in editing this manuscript.